

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>P1925PC00</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/FI2005/050093</b>	International filing date (day/month/year) <b>18-03-2005</b>	Priority date (day/month/year) <b>19-03-2004</b>
International Patent Classification (IPC) or national classification and IPC <b>See Supplemental Box</b>		
Applicant <b>M-REAL OYJ et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
  - a. ☒ (sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:
    - ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
    - ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
  - b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:
 

<input checked="" type="checkbox"/>	Box No. I	Basis of the report
<input type="checkbox"/>	Box No. II	Priority
<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/>	Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/>	Box No. VI	Certain documents cited
<input type="checkbox"/>	Box No. VII	Certain defects in the international application
<input type="checkbox"/>	Box No. VIII	Certain observations on the international application

Date of submission of the demand <b>12-10-2005</b>	Date of completion of this report <b>21-03-2006</b>
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Form PCT/IPEA/409 (cover sheet) (April 2005)

**Supplemental Box**

In case the space in any of the preceding boxes is not sufficient.

Continuation of: Cover sheet

**International patent classification (IPC)**

*D21H17/02* (2006.01)

*D21H17/06* (2006.01)

*D21H17/00* (2006.01)

*D21H 21/00* (2006.01)

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2005/050093

## Box No. I Basis of the report

## 1. With regard to the language, this report is based on:



the international application in the language in which it was filed

a translation of the international application into \_\_\_\_\_,  
which is the language of a translation furnished for the purposes of:

international search (Rules 12.3(a) and 23.1(b))



publication of the international application (Rule 12.4(a))



international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

the international application as originally filed/furnished



the description:

pages 1 - 9 \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_



the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* 1 - 2 \_\_\_\_\_ received by this Authority on 19-01-2006

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_



the drawings:

pages 1 - 3 \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_



a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

the description, pages \_\_\_\_\_



the claims, Nos. \_\_\_\_\_



the drawings, sheets/figs \_\_\_\_\_

the sequence listing (*specify*): \_\_\_\_\_any table(s) related to the sequence listing (*specify*): \_\_\_\_\_4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

the description, pages \_\_\_\_\_



the claims, Nos. \_\_\_\_\_



the drawings, sheets/figs \_\_\_\_\_

the sequence listing (*specify*): \_\_\_\_\_any table(s) related to the sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI2005/050093

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims	<u>1-12</u>	YES
	Claims		NO
Inventive step (IS)	Claims	<u>1-12</u>	YES
	Claims		NO
Industrial applicability (IA)	Claims	<u>1-12</u>	YES
	Claims		NO

## 2. Citations and explanations (Rule 70.7)

The claimed invention relates to paper and board. The problem to be solved is to make paper from combustible raw materials in such a way that the paper has properties corresponding to those prepared with conventional inorganic fillers.

Reference is made to the following documents:

D1:SU 1079717 A

D2:FI 102402 B

Document D1 and D2 describe use of betuline in paper. Betuline is not used as a filler in D1 but a suspension of betuline is applied on a preliminarily prepared moist blank. The suspension is prepared by dissolving betuline in ethanol and adding water. The obtained paper has improved whiteness and photostability while maintaining high mechanical strength. In D2, betuline is used as pigment in a coating slip for paper or board.

Thus, the claimed invention differs from the disclosure in D1 and D2 and the invention defined in claims 1-12 is therefore novel.

There is no indication in D1 or D2 to use betuline as a filler in paper or board and therefore the invention defined in claims 1-12 can not be considered obvious to a person skilled in the art.

The invention is industrially applicable.

## Claims /PCT/FI2005/050093/Amended claims 19.1.2006

1. Use of betuline as a filler in paper or board, wherein betuline is added to the pulp during the production of paper or board.

2. Use according to Claim 1, **characterized** in that betuline is used in combination with organic and/or inorganic fillers.

3. Method for producing paper or board, **characterized** in that an aqueous slurry is made of betuline, followed by the addition of said slurry to the pulp during the production of paper or board, and removal of water from the paper web, and then the production of paper or board is continued in a conventional manner.

4. Method for producing paper or board according to Claim 3, **characterized** in that betuline is slurried in water together with one or more excipients selected from the group consisting of dispersing agents, surface active agents, and stabilizers.

5. Method for producing paper or board according to Claim 3 or 4, **characterized** in that an aqueous slurry containing betuline is added to the pulp during the production of paper or board, after the addition of retention aids.

6. Method according to any of the Claims 3 – 5, **characterized** in that the aqueous slurry contains no more than 60 % by weight of betuline.

7. Method according to any of the Claims 3 – 6, **characterized** in that the aqueous slurry contains from 5 to 35 % by weight of fine betuline.

8. Method according to any of the Claims 3 – 7, **characterized** in that the aqueous slurry contains betuline having a mean particle size of no more than 30  $\mu\text{m}$ .

9. Method according to any of the Claims 3 – 8, **characterized** in that the aqueous slurry contains betuline having a mean particle size between 0.3 and 10  $\mu\text{m}$ .

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10. Method according to any of the Claims 3 – 9, **characterized** in that the aqueous slurry contains betuline having a mean particle size between 0.5 and 2.5  $\mu\text{m}$ .

11. Paper or board, **characterized** in that it contains from 0.1 to 60 % by weight, preferably from 5 to 35 % by weight of betuline as the filler.

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12. Paper or board according to Claim 11, **characterized** in that it contains betuline in combination with inorganic and/or organic fillers as the filler.